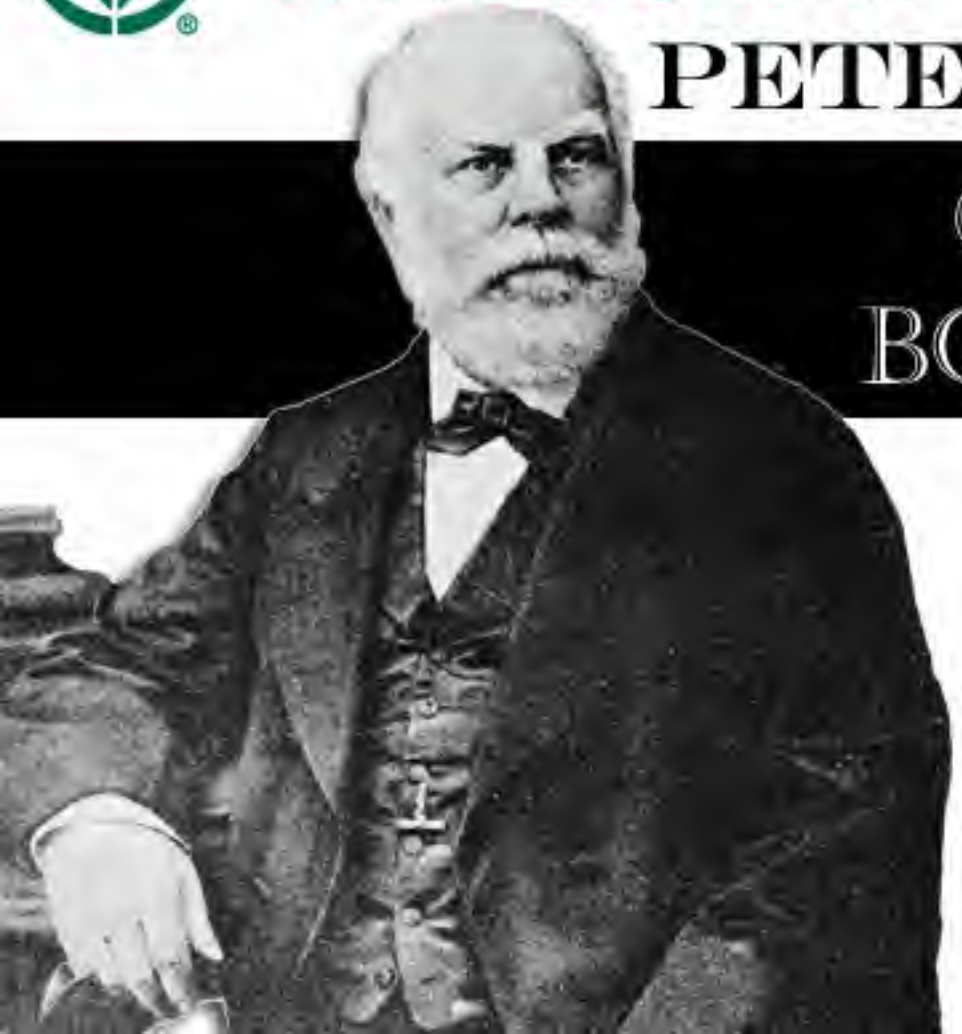
# Missouri Botanical Garden
## Peter H. Raven Library

# George Engelmann Botanical Notebooks



*Pagination Note:*
*Since many of the items lack a specific page number, the page number displayed online refers to the sequentially created number each item was given upon cataloging the materials.*

| 1874 | Night | Day | 24 h | |
|---|---|---|---|---|
| May | " | " | " | Growth of Scape |
| 15 6 | 1.5 | 0.8 | 2.3 | of Y. angustifolia |
| | 0.8 | 0.8 | 1.6 | 14 – 25 May |
| | 1.0 | 0.9 | 1.9 | 11 days |
| | 0.5 | 1.0 | 1.5 | |
| | 0.7 | 1.2 | 1.9 | 21 inches |
| | 0.9 | 1.0 | 1.9 | |
| | 0.9 | 1.0 | 1.9 | in 12 days 2 fast |
| | 0.7 | 0.5 | 1.2 | |
| 23 | 0.6 | 0.6 | 1.2 | |
| 24 | 0.9 | 1.7 | 2.6 | |
| 25 m | 0.7 | 2.3 | 3.– | |
| 11 | 9.2 | 11.8 | 21.0 = 11 days | |
| | 0.84 | 1.07 | 1.91 | |

Yucca angustifolia scape

Yucca — 6 p.m – 7 a.m.

(night) average 0.84 inches

7 a.m – 7 p.m (day) average 1.07 inches

night : day growth = 4 : 5

Average growth in 24 hours 1.91 inch

growth in cool weather 1.2 – 1.9

— — warm — — 2 – 3

The 2d or 3d warm day only influences the growth

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FRESE & C

DRUGGISTS & PHARM

NO. 3005 OLIVE ST. near GAR

ST. LOUIS, MO.

Mrs augus
by 6 3/4 p.m.
6 3/4 a.m.
6 3/4 p.m.
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Ev
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May Yucca angustifolia 1874

| | | | | | |
|---|---|---|---|---|---|
| 14 | Thursday | 6¾ p.m. | 1 | 11.5 | dry clear |
| 15 | Friday | 6¾ a.m. | 2 | 1.2 | " " |
| | | 6¾ p.m. | 2 | 1.8 | cooler, clear |
| 16 | Saturday | Morn | 2 | 2.6 | |
| | | Even | 2 | 3.2 | |
| 17 | Sunday | Morn | 2. | 4.2 | |
| | | Ev | 2 | 5.1 | |
| 18 | Monday | Morn | 2. | 5.6 | |
| | | Ev | 2 | 6.6 | |
| 19 | Tuesday | Morn | 2. | 7.3 | |
| | | Ev | | 8.5 | |
| 20 | Wednesday | Morn | | 9.4 | |
| | | Ev | | 10.4 | |
| 21 | Thursday | Morn | | 11.3 | |
| | | Ev | B | 0 3 | |
| 22 | Friday | Morn | | 1.0 | |
| | | Ev | | 1.5 | warm |
| 23 | Saturday | Morn | | 2 1 | |
| | | Ev | | 2.7 | hot |
| 24 | Sunday | Morn | | 3 6 | |
| | | Ev. | | 5 3 | hot |
| 25 | | Morn | | 6 0 | |
| | | Ev | | 8 3 | warm |

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Rec'd Apl 16

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BOTANIC GARDEN, CAMBRIDGE, MASS.

April 2 1874

My Dear Dr. Engelmann

The missing letter comes to hand this morning - not lost but having taken a circuit through Mississippi.

Uncle Sam is nearly as fond of this time.

Very much obliged for the specimens of Populus. There is no good in attempting just yet to write up the genus. It cannot be done without more materials, which do

Yucca angustifolia ~~var radiosa~~ Data from Arizona
seed gathered by Dr E Palmer 1869, sown in May
1870

1st Year Germinates with the seed under ground
After the second leaf is made, the first adventitious
rootlets pushes out through the base of the ~~stem~~
~~of the~~ cotyledon itself (which to the greater part
remains hidden in the albumen of the seed and
seems to absorb its nutriment.
Then more rootlets push through the base
of the following leaves, and begin to nourish
the plant, while the original root as
well as the cotyledo dies off.
Such roots are formed throughout the
first season, thick white fibres with
comparatively few fibrillae.
All these 1st year leaves have no marginal fibres
At the same time 5 to 7 leaves are
formed, but no accessory stem; leaves in 1/2 order
(or opposite)
2d year When the plant is fully one year old or
more, in the 2d summer, a lateral shoot
forms in the axis of one of the lower leaves, and breaks
through its back This shoot is thick at 3 leaves,
fleshy and white and covered with leaf scales.
Towards the end of the season it is 1/2 — 1 inch long
and bears also fleshy white roots, from the nodes
while the old roots gradually decay. But not only
from the new shoot but also ~~from~~ at the bases of the
leaves of the original stem new roots are formed.
The leaves of the orgnl stem are at the end of the
season 12-20 (at least in some species — in the
fleshy pulled ones) and in some (Yucca baccata)
disposed in 3/8 order. Leaves show no filaments yet
In most Yuccas (it is supposed & known now
only in Y. baccata) this branch or secondary axis
takes a horizontal direction.

Mrs

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but in Y. angustifolia (I speak only of the Arizona variety, radiosa) it shoots perpendicularly downward in 3d year I have now only this last Y. angustifolia var radiosa figured on the first page of this sheet before me;

The secondary axis shoots downward and by the end of the season attained a length of 8 inches (in firm clayey soil of my yard) a thickness of 4 or 5 lines, with a white flaky club-shaped termination is covered with irregular rings, the remnants of the Niederblaetter, scales which, about ½ inch apart, cover it in 1/3 order.

All the old roots at the neck of the stem are decayed at the end of the 3d season, but new roots are formed at the nodes along the descending shoot thinner, firmer, longer than the old ones. These roots seem to originate on both sides of the scales (not from the centre).

Leaves 18 to 25 (÷ 3/8) arranged ⅓

In his letter of Febr 3d 1857 Mr Lindheimer describes and sketches 4 sp of Yucca growing about N Braunfels, of which No 2 is Y. angustifolia. "root" consists of a perpendicular subterranean stem, a fingers thick, 2-3 feet high or long, "rising" from a horizontal "rot" 1½-1 inch thick, which bears the buds of future stems. — In all the other species of his, this perpendicular piece is wanting

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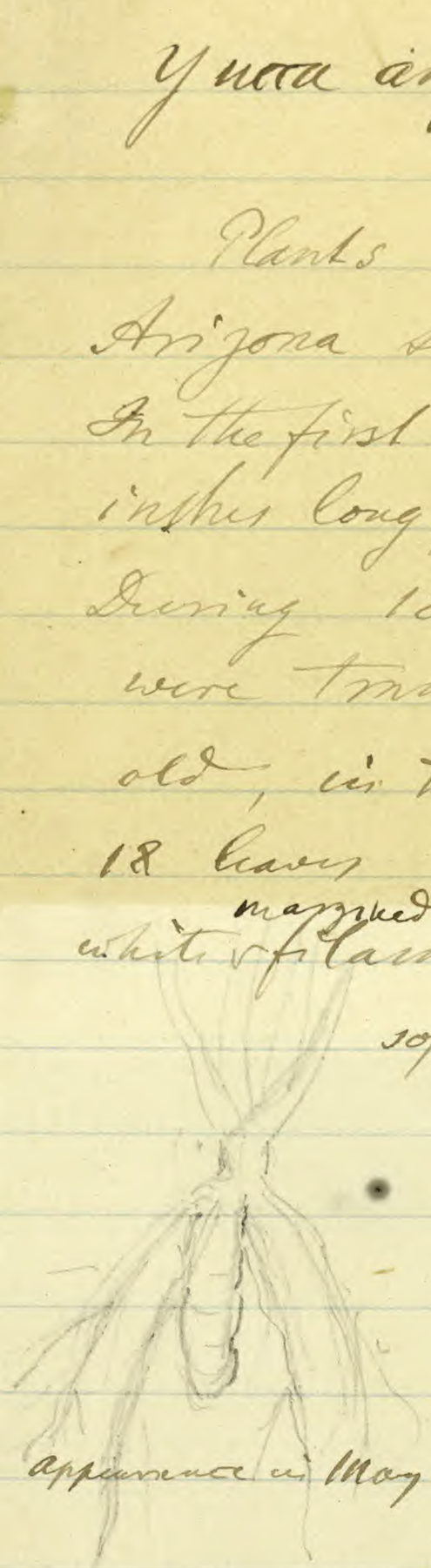
elata Engl

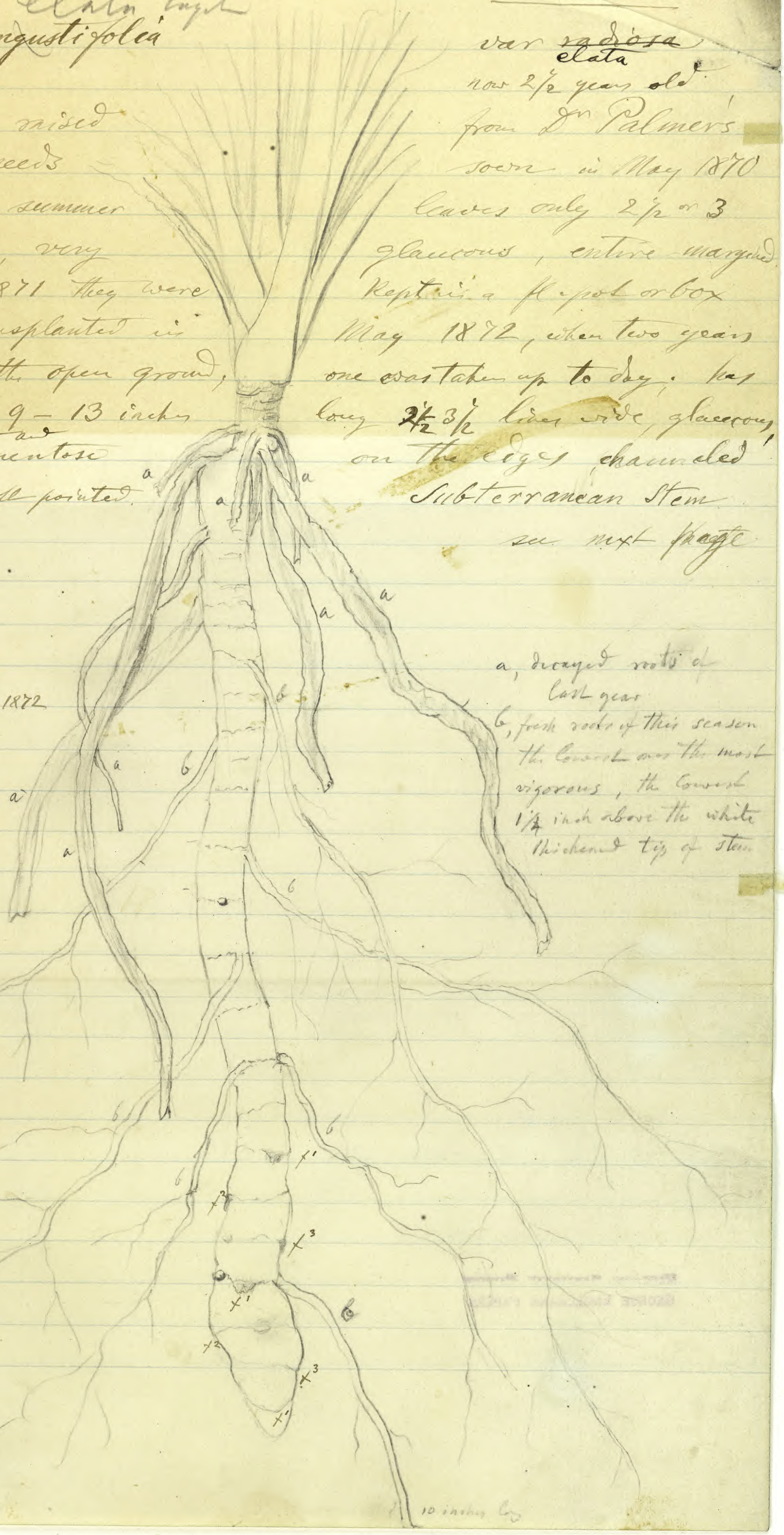
# Yucca angustifolia

Nov 5 1872

Plants raised
Arizona seeds
In the first summer
in this long, very
During 1871 they were
were transplanted in
old, in the open ground,
18 leaves 9 – 13 inches
mapped and
white filamentose
soft pointed.

var ~~radiosa~~ elata
now 2½ years old
from Dr Palmers
sown in May 1870
leaves only 2 p or 3
glaucous, entire margined
Kept in a flower box
May 1872, when two years
one was taken up to day. has
long 2½ 3 k broad, glaucous,
on the edges, channeled
Subterranean Stem
see next page


appearance in May 1872




a, decayed roots of
last year
b, fresh roots of this season
the lowest are the most
vigorous, the lowest
1½ inch above the white
thickened tip of stem

10 inches long

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Rec'd June 8 1872
Ans June 21

# (1) Yucca jottings!

A few leaves of Nº 4 (4. com)
& Nº 1. 2 & 3 sent by
this mail. 3 packages
have been sent (Plants of 1. 2. 3)
& 2 letters.

1. June '72.

* visited at 12. 0C. 7M

Strolled out to the Yucca patch of
Nº 1, at "Nanny Creek", to observe
progress, & found them still flowers
in bloom & attracting their folks
also, — for here were numbers
foul-smelling bugs, — dandy butter-
flies, & even flagtail hummers! — the
last had climbed up high for
purposes of recreation & observation!
Many flowers have of course
withered & dropped, — and still drop
at my slightest touch, — but here
& there you find some with clings,
— Examine these & you discover
that the pedicel has become
turned, & already straightening itself!
A few indeed are even now Erect
& the young Capsule visible!

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The flowers were of course closed, — those seemingly wh were fresher & wh would expand to night, had the stamens (filaments) already receded, & the pollen in some instances expelled from the anthers & adhering in small golden lumps to the sides of the petals; but in many instances no pollen was to be found on the petals! The bud next in order of maturity & wh doubtless may not expand until to morrow night — I also examined, but the stamens were still straight or unexpanded, — the anthers sagittate, & no appearance of the pollen: I examined a great many flowers on the plant, to see if I could learn anything about the stigma &c, & when ready for copulation! On the perfectly fresh & last opened flowers — or rather I should perhaps say on those wh would expand for the first time this afternoon & to night — I failed to observe anything peculiar about the stigma, but on many of those wh apparently had but just commenced to wither, — or, wh at any rate were not so fresh & immature as the former, —

I in repeated instances observed what seemed to be a minute glistening drop just within the stigma, to wh sanguilegs the pollen is carried by the various insects wh delight to bury themselves in the depths of the flrs! I did not at first trouble myself to look into these very mature flowers, - wh possibly bloomed last night, but observing that the insects were generally, nay, almost always - to be found within them - I opened the petals of one, in wh, a kind of beetle was disporting himself, - rooting" hog-like at the base of the ovary, & his legs entangled in the filaments of the stamens - wh waved & swayed about during his gambols! Plucking the flr I immediately divided the exudation above mentioned, & then following the track of my dogs I seldom failed to [redacted] find my quarry! But only in these flowers & not in the others! With a small microscope I attempted to examine the stigma &c, but learned nothing further! Except that the 3 stigmas were more recurved.

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As regard the Insects meet, there were 3 or 4 different kinds, - Es= -pecially that foetor bug so frequently found in gardens, & wh I have seen Encountering a stalk from top to bottom, but I found but one of these within the flr (bottle), - there was another however much smaller, wh was a not infrequent visitor of these cool chambers, one of wh I captured with his flr, & with wh I shall preserve & send to L. I. - ! This year I have seen no moths within the flrs as I invariably did last with Y. No 2

---

I found it easy enó to discover the fecundated flowers, or rather I shó say those wh were running into the capsular form (for per- -haps almost Evy flr is im- -pregnated!) by the drying of the petals, they being persistent- in that case, - and by the tur= =nessmidrib & immediate straighten- -ing of the pedicel, & indeed (as I before remarked) some on the upper portion of the peduncles (several) were already erect!

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Jmo July 26 1871

Yucca. I find
some buds of filamentosa.
I think I shall have
to give up on the pleiopla-
nums. I cried hard
think those little bits
of anthers were the
normal thing.
And I can never find
it at a flower of pollen
is shed, or at least yet
with stigmas — and is very scant, though good

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Compton-Hill.' Thursday Morn.

Lieber Doctor -

D. Hermann wünscht Sie Dich so bald
als möglich zu sehen. Er läßt Dir

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St. Louis Oct 1872

10 - 14 days after date

Yours [illegible]

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The corky "bark" of old
Yucca stems is in 1 to 2 regular
concentric compartments by both
Prof Brewer (Y. brevifolia)
& Dr Mellichamp (Y. aloifolia)
& Dagwood (Cofer) bark,
only, in the former, with coarser
& less heavy bark &
Y. Treculeana is of different
appearance, more scaly

Something like Annual Rings!

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Missouri Jan 1st 1873

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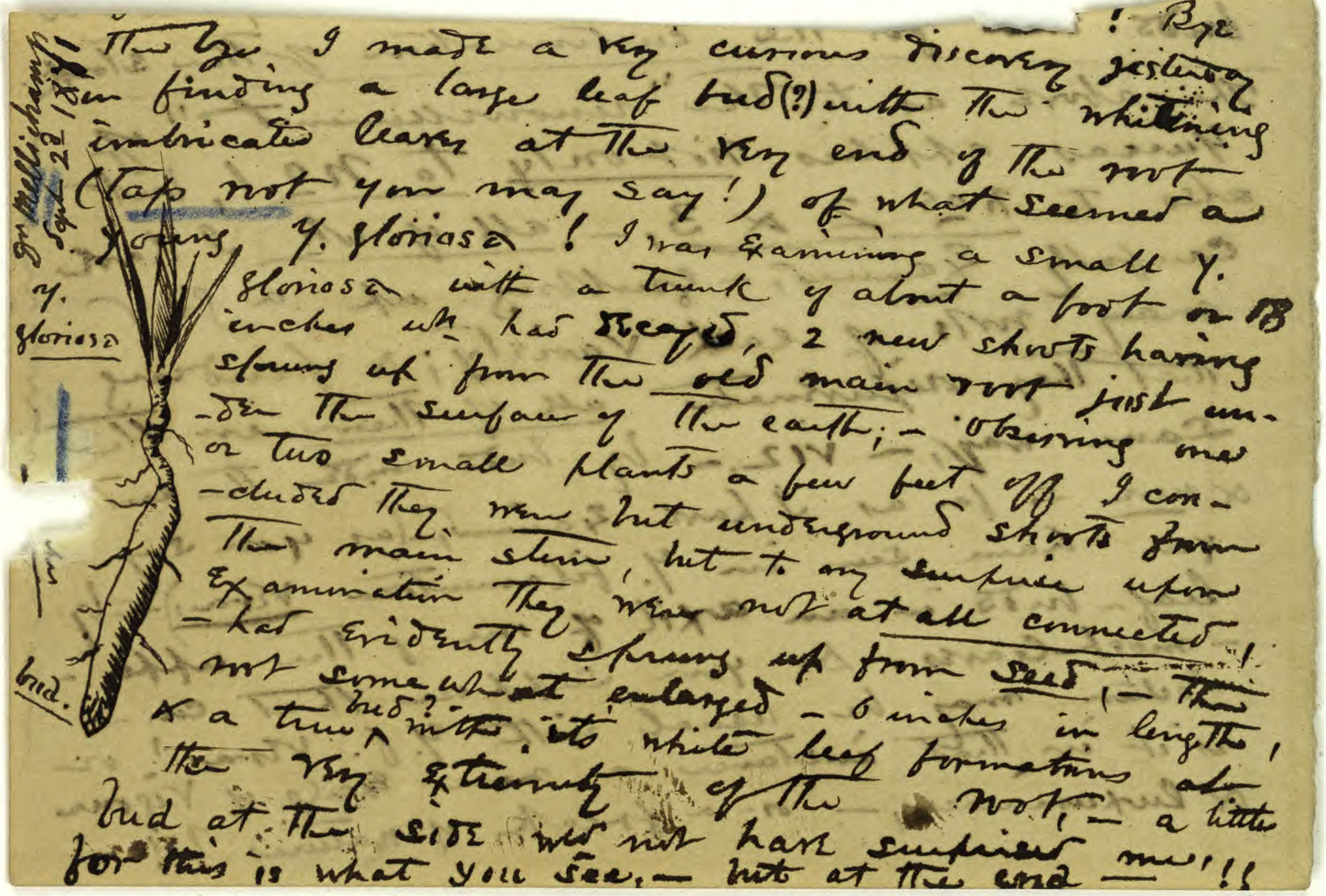
Dr Millspaugh
Sept 22 1891

Thus far I made a very curious discovery yesterday in finding a large leaf bud(?) with the whitening imbricated leaves at the very end of the root (Tap root you may say!) of what seemed a young Y. floriosa! I was examining a small Y. floriosa with a trunk of about a foot or 18 inches wh had sent off 2 new shoots having sprung up from the old main root just under the surface of the earth; — observing one or two small plants a few feet off I concluded they were but underground shoots from the main stem, but to my surprise upon examination they were not at all connected — but evidently sprung up from seed! — Thus not somewhat enlarged — 6 inches in length, & a true bud? with its white leaf formations at the very extremity of the root, — a little bud at the side was not have surprised me!!! for this is what you see, — but at the end —

Y. floriosa

bud.

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buds: ... for the continuation of the stock.

The above as to the "renourishment" of Yuccas applies not only to No 1, but also to Nos 2 & 3, — all of wh I have carefully Examined, — spending at a time many hrs of each variety, & finding that they resemble all of them in the same way, — viz, — by buds under the ear & never so far as I have Examined, — (as you say leaf-buds in an axil of one of the filamentous Vera,) — by most leaves. Do you suppose that condition may be usual with Y. b. Vera? or is it in that instance a mere Excess of Vigour & luxuriance, — or a freak of nature?!

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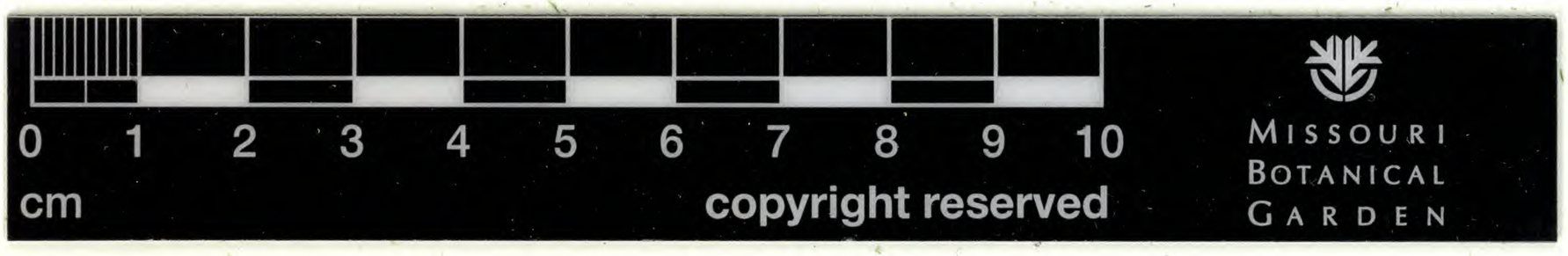
London Gardener's Chronicle Oct 19th 1872 №242

pag. 1397 : Yuccas seeding I think there must be an error in regard to Yuccas not producing seed in Europe, owing to the non-attendance of the fertilizing insects. I remember, while at Dulwich in the summer of 1868 some plants of Y. flaccidas produced a good crop of seeds which germinated freely and gave us a nice lot of plants, which seems to indicate either that the little moth is in the country or that at least during warm summers the plants can manage very well without it. I dare say the Messrs Smith could confirm the above statement.

T. Smith, Newry.

Prof. A. Dickie's article is reputable = №240
Octob 5th 1872 pg 1322



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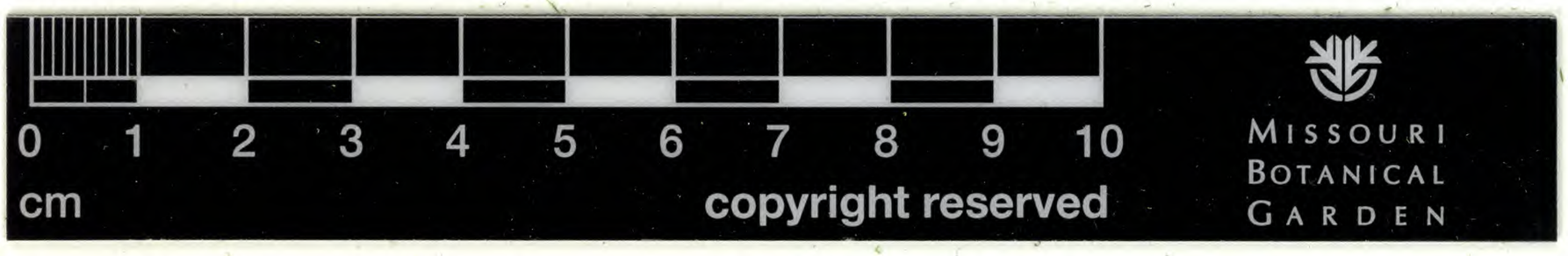

Tronuba Yuccaselle Riley as reported in Dubuque
Meeting, Aug 1872, republished in Gardeners Chronicle
London 1872, N.S 40 pag. 1322, Octob 5th

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